사경 제작을 위한 통합 보정가공 소프트웨어를 제공하여, 사용자가 작업을 효율적으로 수행하기를 기대한다.

[구 AT-03] Concept Design of a K-GMT Fiber-fed Multi-Object Spectroscopy

Sungwook E. Hong (홍성욱)[1], Changbom Park (박창범)[1], Haeun Chung (정하은)[1,2]
[1]School of Physics, Korea Institute for Advanced Study (고등과학원 물리학부), [2]Department of Physics and Astronomy, Seoul National University (서울대학교 물리천문학부)

2022년부터 가동되는 거대 마젤란 망원경(GMT)은 1시간 노출로 I 필터 24등급 이상의 어두운 천체도 관측할 수 있을 것으로 예상되며, 이 경우 10초 지름의 시계 안에 3천 개 이상의 관측 가능한 천체가 존재하게 된다. 따라서 GMT를 가장 효율적으로 사용하는 방법은 은하와 항성에 대한 광시야 분광 탐사를 수행하는 것이다. 이를 위해서는 한 번에 여러 곳에 존재하는 수천 개의 천체를 동시에 분광할 수 있는 광섬유 다천체 분광기기가 필요하지만, 현재까지 제안된 GMT의 1세대 기기 중에서는 이를 동시에 만족하는 기기가 없다. 본 발표에서는 가시광선 영역의 분광기 13대를 연결하여 2천 개의 천체를 동시에 분광하는 기기의 개념 설계를 제안하고, 현재 논의되고 있는 다른 다천체 분광기기 디자인과의 비교를 수행한다.

[구 AT-04] Status of the MIRIS Data Reduction and Analysis

Jeonghyun Pyo[1], Il-Joong Kim[1], Woong-Seob Jeong[1,2], Dae-Hee Lee[1], Bongkon Moon[1], Youngsik Park[1], Sung-Joon Park[1], Won-Kee Park[1], Duk-Hang Lee[2], Uk-Won Nam[1], Wonyong Han[1,2], Kwang-Il Seon[1,2], Toshio Matsumoto[3], Min Gyu Kim[1,4], Hyung Mok Lee[4]
[1]Korea Astronomy and Space Science Institute, [2]University of Science & Technology, [3]ISAS/JAXA, Japan, [4]Seoul National University

MIRIS (Multi-purpose InfraRed Imaging System) is a compact near-infrared space telescope launched in 2013 November as the main payload of STSAT-3 (Science and Technology Satellite 3). The main missions of MIRIS are 1) the Paα line survey along the Galactic plane, 2) the large area (~ 10°×10°) surveys of three pole regions (north ecliptic pole, and north and south Galactic poles), and 3) the monitoring observations toward the north ecliptic pole. MIRIS started observations for the main missions in 2014 March and finished in 2015 May. While MIRIS was taking the observation data and afterward, we are continuing the analysis of data. Based on the results from analysis, the data reduction pipeline has been revised. In this talk, we introduce the revised version of the MIRIS data reduction pipeline and the status of the data reduction and anlaysis.

[구 AT-05] Korean Contribution to All-Sky Near-infrared Spectro-Photometric Survey

Woong-Seob Jeong[1,2], Jeonghyun Pyo[1], Sung-Joon Park[1], Bongkon Moon[1], Dae-Hee Lee[1], Won-Kee Park[1], Duk-Hang Lee[1,2], Kyeongyeon Ko[1,2], Il-Joong Kim[1], Minjin Kim[1,2], Yujin Yang[1], Jongwan Ko[1], Yong-Seon Song[1], Young Sam Yu[1], Myungshin Im[3], Hyung Mok Lee[3], Jeong-Eun Lee[4], Hyunjin Shim[5], Toshio Matsumoto[1,6], SPHEREx Korean Consortium[1,2,3,4,5,6,7]
[1]Korea Astronomy and Space Science Institute, Korea, [2]University of Science and Technology, Korea, [3]Seoul National University, Korea, [4]Kyung Hee University, Korea, [5]Kyungpook National University, Korea, KAIST, Korea, [6]ISAS/JAXA, Japan, [7]Korea Institute for Advanced Study, Korea

The SPEHREx (Spectro-Photometer for the History of the Universe Epoch of Reionization, and Ices Explorer) is one of the candidates for the Astrophysical Small Explore mission of the NASA proposed together with KASI (PI Institute: Caltech). It will perform an all-sky near-infrared spectral survey to probe the origin of the Universe and water in the planetary systems and to explore the evolution of galaxies. The SPHEREx is designed to cover wide field of view of 3.5 x 7 deg. as well as wide spectral range from 0.7 to 4.8μm by using four linear variable filters. The SPHEREx is under the Phase-A study to finalize the conceptual design and test plan of the instrument. The international partner, KASI will contribute to the SPHEREx in the hardware as well as the major science cases. The final selection will be made in the early 2017. Here, we report the current status of the SPHEREx mission.

성간물질

[구 IM-02] Core formation in different environments: Planck Galactic Cold Clumps (PGCCs) in the λ Orionis cloud, Orion A and Orion B clouds

HeeWeon Yi[1], Jeong-Eun Lee[1], Tie Liu[2], Kee-Tae Kim[2], and Yuefang Wu[3]
[1]School of Space Research, Kyung Hee University, Yongin-Si, Gyeonggi-Do 446-701, Republic of

Korea, [2]Korea Astronomy and Space Science Institute, 776 Daedeokdae-ro, Yuseong-gu, Daejeon 305-348, Republic of Korea, [3]Department of Astronomy, Peking University, 100871, Beijing China

Based on the 850 μm dust continuum data from James Clerk Maxwell Telescope (JCMT)/SCUBA-2, we compare overall properties of Planck Galactic Cold Clumps (PGCCs) in the λ Orionis cloud with PGCCs in other molecular clouds, Orion A and Orion B. The Orion A and Orion B clouds are well known active star-forming region, while, λ Orionis cloud has a different environment associating with prominent OB associations and a giant H II region. PGCCs in the λ Orionis cloud have higher dust temperatures (Td～16.08 K) and lower values of dust emissivity (β～1.65) than Orion A and Orion B clouds. In addition, we found the lowest detection rate (16 %, 8 out of 50) of PGCCs at 850 μm in the λ Orionis cloud while among three regions; Orion A and Orion B clouds show much higher detection rates of ～ 76 % (23 out of 30) and 56 % (9 out of 16), respectively. The detected 8 PGCCs in the λ Orionis cloud have substructures and we identified 15 cores. The cores also show much lower median values of size (～0.08 pc), column density (～), number density (～), and mass (～) compared with other cores in the Orion A and Orion B clouds. These core properties in the λ Orionis cloud can be attributed to the compression and external heating by the nearby H II region, which may prevent the PGCCs from forming gravitationally bound structures and eventually disperse them. These results well present the negative stellar feedback to core formation.

[구 IM-03] Upgraded TRAO and its performance

Chang Won Lee[1,2], Hyunwoo Kang[1], Changhoon Lee[1], Jae Hoon Jung[1], Il-Gyo Jeong[1], Youngung Lee[1], Young Sik Kim[1,3]
[1]Korea Astronomy and Space Science Institute, [2]University of Science & Technology, [3]Chungnam National University

TRAO has been newly equipped with a multi-beam receiver system, 16 pixel MMIC preamplifiers in a 4x4 array, a FFT spectrometer, and new control computer systems. In our new receiver systems one can make simultaneous observations with two molecular lines maximum 15 GHz apart with a spectral band width of 60 MHz. Typical system temperatures are about 160 – 200 K at 86 ~ 100 KHz and 400 – 500 K at 115 GHz in the dry weather. The new systems using On-The-Fly mode were found to be very efficient in making quick and sensitive maps of large clouds with a high velocity resolution (~0.04 km/s at 100 GHz). TRAO now calls for proposals for 2016 and 2017 observing season for everybody. In the talk we will introduce the current status of TRAO upgrade and its scientific preliminary results.

[구 IM-04] Filaments and Dense Cores in Perseus Molecular Cloud

Eun Jung Chung and Chang Won Lee
Korea Astronomy and Space Science Institute

How dense cores and filaments in molecular clouds form is one of key questions in star formation. To challenge this issue we started to make a systematic mapping survey of nearby molecular clouds in various environments with TRAO 14m telescope equipped with 16 beam array, in high (N_2H^+, HCO^+ 1-0) and low ($C^{18}O$, ^{13}CO 1-0) density tracers (TRAO Multi-beam Legacy Survey of Nearby Filamentary Molecular Clouds, PI: C. W. Lee). We pursue to dynamically and chemically understand how filaments, dense cores, and stars form under different environments.
We have performed On-The-Fly (OTF) mapping observations toward L1251, southern part of Perseus molecular cloud, and Serpens main molecular cloud from January to May, 2016. In total, ~3.5 square degree area map of ^{13}CO and $C^{18}O$ was simultaneously obtained with S/N of >10 in a velocity resolution of ~0.2 km/s. Dense core regions of ~1.7 square degree area where $C^{18}O$ 1-0 line is strongly detected were also mapped in N_2H^+ 1-0 and HCO^+ 1-0. The L1251 and Perseus MC are known to be low- to intermediate-mass star-forming clouds, while the Serpens MC is an active low-mass star-forming cloud. The observed molecular filaments will help to understand how the filaments, cores and eventually stars form in a low- and/or intermediate-mass star-forming environment. In this talk, I'll give a brief report on the observation and show preliminary results of Perseus MC.

[박 IM-05] A Search for Very Low-luminosity Objects in Gould Belt Clouds

Mi-Ryang Kim[1,2], Chang Won Lee[1,3], Michael M. Dunham[4], Neal J II Evans[5], Gwanjeong Kim[1,3], and Lori E Allen[6]
[1]Korea Astronomy and Space Science Institute,